that whenever the people have suffered from any cause, the deaths have correspondingly increased, the births have decreased, and the mean duration of life has been shortened. In periods of prosperity, he has found results directly opposite to these. From 1747 to 1755, the annual mortality of Berlin was one in twenty-eight. Between 1762 and 1799, it improved to one in twenty-nine and a fraction. Here the beneficial change was retarded by the ravages, the losses, or disappointments of war; and from 1802 to 1806, it had retrograded to one in twenty-seven; but from 1816 to 1822, a period of exultation and tranquillity to the Prussians, the value of life took a remarkable leap, and the annual deaths fell to less than one in thirty-four.*

Thus, we find man surrounded by innumerable circumstances which cannot but give a decided direction to his disposition and propensities, which controul his existence, and undermine his health: he believes himself an agent, lordly and free, and yet he is the offspring of nature, like every other created object; he renders himself master of every thing, and yet he must be subservient to them, in his turn, wherever he may abide.

Philadelphia, 1830.

ART. XI. *Observations on a New Variety of Peruvian Bark, with some Remarks on the Alkaline Bases, Quinine and Cinchonine.* By GEORGE W. CARPENTER, of Philadelphia.

PERUVIAN bark, one of the most important articles of the materia medica, embraces a number of species, in the medicinal qualities of which there is a vast disparity. It is therefore peculiarly unfortunate that its natural history and classification should be so enveloped in ambiguity, the nomenclature of the different species so inadequate and defective, and the various writers so opposed in their opinions on the subject, as to render the investigation of the student from books almost fruitless. The attention of our pharmacologists should be particularly directed to the cinchona, for the purpose of determining a specific classification of those species now occurring in commerce, and of establishing a nomenclature for them, by which each variety could be readily particularized, and at once understood by its name, which, in its present unsettled history, is impossible. In the Philadelphia Journal of the Medical and Physical Sciences, Vol. XI. I called the attention of the faculty to this subject, and described the several species of Peruvian bark which then occurred in commerce, as carefully and accurately as possible from specimens before me, so that the several species might be readily known and contradistinguished. I then suggested, as the most appropriate nomenclature, the names of the provinces in South America from which the different species were collected, as Calisaya, Loxa, &c. &c. and which, I am pleased to find, has become generally adopted, and is now the most familiar mode of distinguishing the barks of commerce. The terms Calisaya, Loxa, and Carthagena, conveys at once the particular kind of bark, and is perfectly understood, while the terms lancifolia and cordifolia involve an ambiguity as to the kind intended, inasmuch as several varieties of different qualities come under the same term, and it is impossible to determine which is intended; for example, the Calisaya and Carthagena, (the former the best, and the latter the worst species in commerce,) being both yellow bark, would come under the denomination of cordifolia; hence, if cordifolia was ordered, it would be difficult to determine whether the Carthagena or Calisaya was intended, or some intermediate quality.

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* Medico-Chirurgical Review, loc. cit.

Having devoted considerable attention to this valuable article of our materia medica, I have determined to describe every new species which I may meet with; and as there has appeared, since my description of Peruvian bark alluded to, a species not hitherto observed in our market, and unnoticed by any of the writers on the subject, I propose to describe it in the present communication. This bark I denominate Maracaibo, being brought from that place, generally in bales of from seventy to one hundred pounds, and the importation of it is likely to be continued, so that we may calculate upon a regular supply. This bark is much superior to the Carthagena or common bark, producing more than double the amount of saline matter composed of cinchonine and quinine; also a larger quantity of extractive matter than the latter, and is therefore of at least more than double the value of the latter. As the former can be purchased at the same price as the latter, it will be advantageous for the practitioner to be acquainted with its distinguishing characters, that he may be enabled to discriminate it among the different species and varieties of common bark.

It occurs in flat, short, and broken pieces, as if separated from the tree with difficulty, mostly of from one to three inches in length and half to one inch broad, and rather thinner than Carthagena bark. Occasionally small quills are found, the longitudinal edges folding together, forming tubes from a fourth to a half inch in diameter. It is of a deep yellow colour; the epidermis is extremely thin, smooth, of a light gray colour, and is generally removed from the bark. It may be distinguished from the Carthagena bark, by being more compact, by breaking with a short and cleaner fracture, and more particularly by its taste, which is much more intensely bitter. It is quite as strong a bitter as the Loxa bark, but does not possess the astringency of the latter. The internal layer is fibrous, but in a less degree than the Carthagena. This bark has only appeared in our market within a year or two, and as it will supply the place of a much inferior article, is of high importance to the profession.

The quality of barks depend unquestionably upon the product of cinchonine and quinine they respectively contain, and the separation of these alkalies, is a very valuable mode of discovering with precision the comparative quality of different species of bark. Different barks, however, produce various *proportions* of these two salts; thus we find the Calisaya produces most quinine, the Loxa most cinchonine, and the red or oblongifolia both these salts in nearly equal proportions. What is the comparative value of these too salts is yet a subject of controversy, a considerable majority however are in favour of the quinine, perhaps because most of them have not had an opportunity of employing the cinchonine. Dr. Paris goes so far as to state that cinchonine is five times less active than quinine, others contend the reverse. In an interesting paper read before the Academy of Medicine at Paris, and published in the Bulletin des Sciences Medicales, for November, 1825, M. Bally states that he has experimented upon the sulphate of cinchonine, with a view to determine its febrifuge qualities. He administered this sulphate in twenty-seven cases of intermittent fevers of different types, in doses of two-grain pills, giving three or four in the interval of paroxysms, by which treatment he cured the disease as effectually and as speedily as with the quinine, of which twenty-seven cases, there were sixteen tertian, nine quotidian, and two quartan. He remarks further, that the cinchonine has properties less irritating than those of quinine, and that consequently its employment should be more general and preferred in all simple cases; I believe few or no experiments have been made by the physicians of this country upon the medical properties of the cinchonine, it consequently must be very little known to them, from their own experience. It most certainly deserves at least a trial.

The sulphate of quinine, as it is generally termed, is not a perfectly neutral salt, being in the state of a sub-sulphate, and is only partly soluble in water. Its exhibition in this fluid is rendered much more eligible by the addition of a drop of sulphuric acid to each grain of the salt, which makes a perfectly transparent solution, and which I think from its obvious advantages, must entirely supersede the common formula of gum and sugar; a few grains of citric or tartaric acid will have the same effect as the sulphuric acid, and has been preferred by some to the former. Dr. Paris states, he lately saw a prescription in which the salt was directed to be rubbed with a few grains of cream of tartar, and then to be dissolved in mint water. This, he continues, is obviously injudicious, since the tartaric acid decomposes the sulphate, and occasions an insoluble tartrate, which is precipitated. With deference to Dr. Paris, I must differ from him on the following grounds:—The cream of tartar is objectionable, merely from the circumstance, that the active part of the compound may be obtained by a more direct and speedy process with the tartaric acid. The combination of cream of tartar and sulphate of quinine, in the above prescription does produce decomposition, as Dr. Paris has observed, but the virtues of the medicine is not the least affected by it, and the precipitate instead of being an insoluble tartrate of quinine, as he observes, is sulphate of potash; tartrate of quinine is a very soluble salt, and is held in solution, while the water becomes slightly turbid, by the precipitation of sulphate of potash, which however, from its extremely minute division is speedily taken up by the water, when you have a transparent solution of tartrate of quinine, and sulphate of potash, and as the latter answers neither a good nor a bad purpose, it of course can very conveniently be dispensed with, and therefore, as before stated, the tartaric acid should be preferred, as having a more direct and speedy action.

Philadelphia, Nov. 1830.